

Temperature dry well calibrator Models CTD9300-165, CTD9300-650

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Applications

- Bio and pharmaceutical industry
- Food industry
- Demanding on-site calibrations
- Measurement and control laboratories in the chemical industry
- Power stations and plant construction

Special features

- Easy operation via intuitive, user-friendly menus
- Large, easy-to-read display
- Short response times due to optimised control
- Improved accuracy due to homogeneous block temperature



Temperature dry well calibrators, model CTD9300

Description

Range of applications

Whether in laboratories, workshops or on site, these temperature dry well calibrators can meet any calibration requirement. As an option, all versions are available with an integrated measuring instrument. This enables the measurement of resistances, thermoelectric voltages and also current signals (from thermometers with a 0/4 ... 20 mA transmitter) and their direct display in °C.

Using our calibration software and a laptop computer, fully-automatic calibrations of electrical thermometers can be carried out anywhere. It is also possible to retrofit the integratable measuring instrument into existing calibrators.

Two models from -35 ... +650 °C

The dry well calibrators are available for two temperature ranges. The model CTD9300-165 is for temperatures ranging from -35 ... +165 °C, and is primarily suitable for biotechnology, pharmaceutical and food industry applications. Above 40 °C, there is the model CTD9300-650 for temperatures up to 650 °C.

This model is mainly used in power stations, the machine-building industry and also the chemical industry. All versions are fitted with blocks for large inserts, of 28 mm diameter by 150 mm long.

Calibration, simple, quick and reliable

We know our customers' requirements well: Nowadays the main features required are not only high reliability and accuracy, but also safe and simple operation. Our dry well calibrators work with metal blocks that are cooled and heated electrically. Inserts with different inner diameters enable calibration of test probes with a range of diameters. The series CTD9300 calibration instruments achieve the temperature set-point extremely quickly, thanks to a controller developed by us specifically for calibration tasks, thus helping to save costs.

Specifications	CTD9300-650	CTD9300-165
Temperature range	40 ... 650 °C	-35 ... +165 °C
Accuracy	±0.3 K at 300 °C ±0.6 K at 650 °C	±0.1 K at -30 °C ±0.16 K at +165 °C
Stability	±0.03 K at 100 °C ±0.09 K at 650 °C	±0.01 up to 0.02 at +165 °C
Resolution	0.01 K	0.01 K
Gradients, axially ¹⁾	0.4 K	0.06 K
Heating-up time	30 min from 20 °C to 650 °C	12 min from 20 °C to 165 °C
Cool-down time	80 min from 650 °C to 100 °C	7 min from +20 °C to -20 °C
Block material	Brass	Aluminium
Immersion depth	150 mm	150 mm
Insert dimensions	Ø 28 x 150 mm	Ø 28 x 150 mm
Communication		
Interface	RS-232	RS-232
Voltage supply		
Power supply ²⁾	AC 230 (115) V, 50/60 Hz	AC 100 ... 240 V, 50/60 Hz
Power consumption	1,000 W	400 W
Power supply cable	for Europe, 230 V	for Europe, 230 V
Case		
Dimensions, W x D x H	160 x 320 x 420 mm (W x D x H)	160 x 320 x 420 mm (W x D x H)
Weight	10 kg	10 kg

- 1) The axial gradients are the changes in temperature over the first 40 mm (i.e. from 150 mm to 110 mm immersion depth).
2) AC 115 V power supply must be specified on the order, otherwise an AC 230 V one will be delivered.

CE conformity, approvals and certificates

CE conformity

EMC directive	2004/108/EC, EN 61326 Emission (Group 1, Class B) and Interference Immunity (laboratory, test and measuring applications)	2004/108/EC, EN 61326 Emission (Group 1, Class B) and Interference Immunity (industrial application)
Low voltage directive	2006/95/EC, EN 61010-1 and EN 61010-2-10, safety requirements for electrical equipment for measurement, control and laboratory use	

Approvals

GOST	Metrology/measurement technology, Russia
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Certificates

Calibration	Standard: 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkkS calibration certificate
Recommended calibration interval	1 year (depending on the conditions of usage)

Approvals and certificates, see website

Accessories ³⁾	CTD9300-650	CTD9300-165
Integratable measuring instrument	✓	✓
Insert	Ø 28 x 150	
■ Standard bores in steps of 0.5 mm	Ø 1.5 ... 25	
■ 2 bores	1 x Ø 3.2 mm and 1 x Ø 6.3 mm	
■ 6 bores	2 x Ø 3.2 mm, 1 x Ø 4.2 mm, 1 x Ø 6.3 mm, 1 x Ø 8.4 mm and 1 x Ø 9.9 mm	
■ To customer specification ⁴⁾	on request	
Transport case	✓	✓
DKD/DAkkS calibration	at 6 temperatures:	
Measuring uncertainty ±0.2 K or 1.15 % of reading	100, 200, 300, 400, 500 and 600 °C	-30, 0, 50, 100, 130 and 160 °C
Other calibrations	on request	on request

3) The accessories listed here is not included in the standard scope of supply, except for the standard insert with inside diameter 6.5 mm and one insert removal tool.

4) The number of possible bores in a customised insert depends on the diameters of the bores and the permissible minimum distances between the bores and the edge of the insert.

Large, easy-to-read graphical display

All calibrators of the CTD9300 family have a large, easy-to-read graphical display. Brightness and contrast can be adjusted to suit within the system menu.

Easy to work with due to user-friendly menus

The calibrator features two clearly-arranged main menus, which are easily accessed.

- Measurement and calibration menu
- SETUP menu

Measurement and calibration menu

In this menu, temperature set points are defined, and the control is activated by pressing the CONTROL key. The display shows the actual and the temperature set point as well as Min. and Max. temperature; or, as an option, the average temperature. The temperature gradient, in Kelvin per minute, is also displayed.

SETUP menu

In the SETUP menu functions can be set, such as:

- Temperature ramp function
- Configuration of the integratable measuring instrument
- Display parameters
- Temperature units
- RS-232 interface parameters

Further functions include language selection (German/English/French/Spanish), settable alarm function, operating hours counter and a real-time clock with date.

Stable, homogeneous block temperature

Due to a controller, which has been specifically developed for temperature calibration, and a special heating block for temperatures up to 650 °C, a high control accuracy and a homogeneous temperature distribution within the block is achieved. Important features in this context are control algorithms, which have been optimised for the calibration processes, and a heating block with a heating power that increases towards the upper end. The small resulting temperature fluctuations and the good axial temperature distribution lead to a considerably-reduced total uncertainty during calibration.

Integratable measuring instrument (Option)

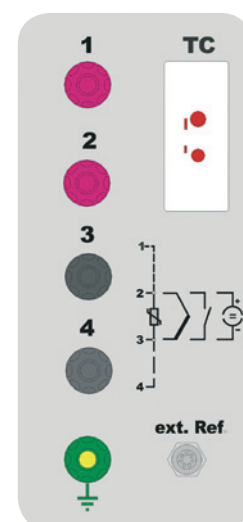
With the measuring instrument, which can also be retrofitted into existing calibrators, Pt100, thermocouples and 0/4 ... 20 mA currents can be measured and converted into temperatures; and also in comparison with an external reference thermometer. Automatic calibrations are possible using a PC/laptop and the calibration software.



Measurement and calibration menu



SETUP menu



Integratable measuring instrument

Scope of delivery

- Temperature dry well calibrator
- Power cord, 1.5 m with safety plug
- Insert with 6.5 mm inner diameter
- Replacement tools
- Operating instructions
- RS-232 interface cable
- Calibration software
- 3.1 calibration certificate per DIN EN 10204

Options

- Integratable measuring instrument
- Instrument variants for AC 115 V
- DKD/DAkkS calibration certificate

Accessories

- Additional standard inserts
- Additional inserts with multiple bores
- Robust transport case
- Insert replacement tools



Temperature dry well calibrator model CTD9300

Ordering information

Model / Power supply / Protective conductor / Integrated read out / External reference / Calibration / Carrying case / Power cord / Additional order details

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